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Dec. 1879. *Mr. Downing, Note on the North Polar Distances etc.* 85
error of zenith distance produces a comparatively small effect on the mean error of longitude.

Blackheath,
1879, Nov. 24.

Addendum.

By the request of Mr. Neison, I have calculated the mean error in longitude for 1878 in two divisions—up to June 1 and after that date. Before June 1 there were 61 observations made with the altazimuth, of which the resulting mean error of longitude is $+7''\cdot54$; after June 1 there were 100 observations, and the corresponding resulting mean error is $+7''\cdot44$. So that the observations in the earlier and later part of that year give results almost identical with each other.

A question having been raised as to how far the changes in the mean error may have been affected by changes in the observers, and in their personality in observing, I have also put together the results of the observations of Mr. Criswick alone, who has been for several years the standard observer at the Royal Observatory, and whose observations extend regularly through the whole of the period during which Hansen's Tables have been used. The following are the resulting mean errors of longitude from the Transit-Circle observations made by him on the separate years specified:—

Year.	No. of Observations.	Mean Error of Longitude by Transit-Circle.
1862	15	$-2\cdot70$
1866	21	$+2\cdot94$
1870	21	$+4\cdot61$
1874	25	$+8\cdot80$
1878	18	$+7\cdot74$

1879, Dec. 22.

Note on the North Polar Distances of the Greenwich Seven-Year Catalogue for 1860. By A. M. W. Downing.

In a communication to the Society at the November Meeting Mr. Stone has given the results of a comparison between the North Polar Distances of his great Catalogue and those of the *Nautical Almanac*; and has deduced the remarkable result that the adopted refractions are too large for the observations made at the Cape during the dry season in November, December, and January, and too small for the observations made at the opposite season of the year. I have examined my comparison of the

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Cape and Greenwich Catalogues for 1860, published in the *Monthly Notices* for 1878, December, in order to ascertain whether any similar effect of the season of the year on the refraction can be detected in the Greenwich observations. For this purpose I have arranged in order of R.A. the stars used in the comparison which are situated between N.P.D. 110° and the horizon of Greenwich, as it is reasonable to suppose that for these stars (which pass the meridian of the Cape within 15° of the zenith) any effect that can be traced to refraction is due to the Greenwich, rather than to the Cape observations.

The quantity $-0''.18$ has been applied to the Greenwich places of all the stars used, this being the systematic difference of the Catalogues between the limits of N.P.D. under consideration. The result then is :—

	^h ^h	^h ^h	^h ^h	^h ^h
Right Ascension	0—6	6—12	12—18	18—24
	"	"	"	"
Corr. to Greenwich	—0'.10	—0'.04	+0'.26	—0'.11

The only one of these mean differences worth attention is probably that for 12^h-18^h , and it appears to show that (if the discordance may be considered as due to refraction), from error in temperature correction, or other causes, the refractions used in the reduction of the Greenwich observations are relatively too small during the months of May, June, and July. It will be remarked that the discordance at the opposite season, included within the limits of R.A. 0^h-6^h , is so small that it may probably be considered as merely accidental.

Note on two Sketches of Jupiter.
By Captain William Noble.

The sketches of *Jupiter* which I herewith present to the Society, were made on the nights of October 4 and October 18 of the present year, and to a great extent explain themselves. They show the very remarkable red spot which has attracted the attention of every observer during the present opposition, and the great dark equatoreal belt to the north of it. They further exhibit the curious assimilation of the contour of the surroundings of the red spot to the outline of the spot itself; an assimilation which would seem to indicate that the convulsion to which this most noteworthy marking can only be referable must be of the most stupendous kind.

One point, however, to which I would particularly invite attention is in connection with the white spot which was visible S.F. the red marking on October 4. In a paper read before the Society by Mr. Brett, in June 1876, he directed our notice to the fact that a bright spot sometimes casts a shadow. Now on the night

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